



Fig 1 Left lateral view showing healing eruptions from cutaneous zoster in the T8-T12 distribution.

The thoracic segments are often affected by cutaneous zoster, but this area is relatively free of motor involvement. However, weakness of intercostal and abdominal muscles may pass unnoticed and, therefore, motor deficits at these levels may be more



Fig 2 Frontal view showing prominent left-sided abdominal bulging. A scar from a previous cholecystectomy is present on the right side.

frequent than reports in the literature would suggest.² This case illustrates a severe degree of weakness of the abdominal musculature, such that an abdominal tumour was suspected.

Diabetic thoraco-abdominal neuropathy has been reported to present with a localised abdominal swelling³ but we do not believe that the diabetes was the cause because the paraspinal EMG findings were not generalised as would be expected in this condition and the excellent recovery is less in keeping with a diabetic radiculopathy.

The clinical course of this case with good resolution of the motor paralysis is consistent with other reported cases of motor zoster where the majority of patients recover² and only 15% have significant residual deficit.

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Matters arising

St Paul and temporal lobe epilepsy

Sir: There have been many efforts to explain the dramatic spiritual conversion of the Apostle Paul (Saul of Tarsus). It has been postulated that his conversion experience was a manifestation of temporal lobe epilepsy.¹ However, we would argue that this diagnosis can only be speculative. It requires the simultaneous occurrence of rare phenomena, selective reading of the biblical texts ignoring several important statements, and still it constructs a scenario marred by inconsistencies.

Paul's conversion (Acts 9:3-9, Acts 22:4-11, and Acts 26:9-18) took place while he was journeying to Damascus to arrest Christians. On the road he was blinded by a bright light, he fell to the ground, and he heard a voice saying "Saul, why do you persecute me?" He replied "who are you, Lord?" He was answered "I am Jesus whom you persecute," and instructed to go to

Damascus, where he regained his vision after three days of blindness.

Dr Landsborough postulates that Paul's experience can be ascribed to an "attack of (temporal lobe epilepsy), perhaps ending in a convulsion, which was startling and dramatic. The blindness which followed may have been post-ictal."¹ This explanation requires the coincidence of an intense emotional aura recalled as being pleasurable, with a prolonged post-ictal cortical blindness. Both of these phenomena, as pointed out by Dr Landsborough's own review, are rare as manifestations of epilepsy.

An analysis of this event can only be made from the descriptions preserved in the biblical text; Dr Landsborough's review carefully examines portions of the text but ignores some other key points. A fact omitted is that the people travelling with Paul are also described as hearing the voice (Acts 9:7) or seeing the light (Acts 22:9). In addition, all of the people travelling with him are said to have fallen at the event (Acts 26:14). These descriptions are inconsistent with an epi-

leptic explanation for Paul's experience.

There are other problems with this explanation for Paul's conversion. When cortical blindness has been reported as a post-ictal phenomenon it has followed generalised motor ("grand-mal") seizures, with gradual return of vision over hours to days.² In five described cases of ictal blindness accompanying occipital status epilepticus, the two patients who had bilateral blindness persisting interictally both manifested depressed mental states. In addition, the patients described showed the lack of awareness of their deficits which is characteristic of cortical blindness.³

In contrast, no mention of a convulsion is made in any of the descriptions of Paul's conversion, nor elsewhere in reference to his life; furthermore, Paul was honoured as a spiritual leader in a culture which may have interpreted a seizure as a sign of demonic influence. There is no indication of any confusion or stupor during the events of Paul's conversion. Paul's distinct memory of his experiences on the Damascus road, including

and following the bright light and blindness (Acts 22:11), would be quite unusual for the events during and after a complex partial or generalised seizure. Furthermore, he apparently was immediately and desperately aware of his deficit, unlike the typical Anton's syndrome of cortical blindness. Finally, unlike the expected gradual resolution seen in the post-ictal states, Paul's blindness remitted in the sudden fashion described by "immediately something like scales fell from his eyes and he regained his sight" (Acts 9:18).

The Acts of the Apostles, which records the events shaping the faith of the early Christian church, is ascribed to Luke, a physician (Colossians 4:14) who was a companion to Paul in many of the subsequent events which are described in the book. He is noted to be a careful observer of the cultural, political, and geographical facts pertinent to his story.⁴ How one interprets his descriptions of the conversion of Paul is, of course, highly dependent on one's presuppositions regarding supernatural workings in the natural world; however, the information available does not suggest epilepsy.

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Landsborough replies:

I am grateful for the comments in the letter from Dr Brorson and Ms Brewer.

It is generally agreed that the Apostle Paul suffered from some kind of chronic illness or handicap which he describes as a "thorn in the flesh". The evidence from Paul's letters that this handicap was epilepsy is in my view substantial. But Drs Brorson and Brewer concentrate on the single event in Paul's life

on the Damascus road, recorded in the book of Acts, and I would agree with them that the possibility of his having on that occasion an attack of temporal lobe epilepsy ending in a convulsion is more speculative.

They point out that an epileptic attack involving Paul would not have involved his companions in the way described (for example, in one account they all fell to the ground, not only Paul). But this does not completely exclude the possibility of Paul's having such an attack. Luke wrote Acts at the earliest in AD63, after Paul had reached Rome, which was about 30 years after his conversion. Oral transmission of the details of a momentous event may become modified with the lapse of time. Discrepancies appear; for example, one of the three records states Paul's companions heard the voice speaking to Paul, another account states that they heard no voice. The differences between the records of the reactions of Paul's companions are unimportant compared with the central fact of his conversion.

There is no mention of loss of consciousness in the records of the event, nor is there any mention elsewhere of Paul's having a convulsion—unless the "thorn in the flesh" does indeed refer (as I think likely) to occasional convulsive seizures. Following an epileptic attack the degree of confusion is variable. Usually the patient is mentally normal. That Paul was able to continue his journey, apparently at once, to Damascus does not therefore negate his having had an ictal episode. Nor would it be unusual that Paul should retain a distinct memory of his experience.

Regarding the question of post-ictal blindness, Paul was certainly aware of his deficit—he had to be led by the hand into Damascus. Not all cases of cortical blindness display Anton's syndrome. I agree with Drs Brorson and Brewer that the rapid return of vision, after three days, in Paul's case is unlike the more usual gradual resolution as reported in cases of post-ictal blindness by Sadeh *et al.*¹ But it cannot be said to exclude it. The categorical record of complete blindness after Paul's aura of a flash of light and his falling to the ground, together with other already named evidence, is marginally in favour of the concept of a post-ictal complication—albeit a rare one.

The patients described by Barry *et al.*² appear to be in a different category. The emphasis is on ictal blindness rather than post-ictal, caused by focal epilepsy of the occipital lobes. If prolonged, with EEG monitoring, the term *status epilepticus amauroticus* is used. The patients with postictal blindness studied by Sadeh *et al.* were not so mon-

itored; they argue for hypoxia, not status epilepticus, as the cause.

Natural events may influence individual decisions. Martin Luther's experience in 1505 on a road near Erfurt, Germany, is a parallel. He was overtaken by a thunderstorm, feared for his life, was prostrated by a flash of lightning, and vowed forthwith to become a monk.³ A cataclysmic natural event such as a first epileptic attack may have influenced Paul at a critical point in his thoughts. The incidence of such an event in his life does not diminish the reality of his spiritual change—from which he never wavered.

Caird⁴ writes, "According to Paul himself, as well as the three accounts in Acts, the episode on the road to Damascus was a great act of God which by itself sufficiently explained the change produced in his life."

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Hyperbaric oxygen and multiple sclerosis

Sir: It is pleasing that, after the positive findings of their earlier report,¹ Barnes *et al.*² now recommend that further studies of hyperbaric oxygen therapy are undertaken in multiple sclerosis patients. Their failure to substantiate the patient's reports of improvement in bladder function, which were also noted by Fischer *et al.*,³ is curious. The improvement has been objectively demonstrated in one uncontrolled⁴ and two double-blind studies.^{5,6} In the UK study, recently reported by Wiles *et al.*,^{5,6} the twenty patients most severely affected by bladder dysfunction were evaluated by cystometry. Of the nine patients who received hyperbaric oxygen, five showed improved bladder capacity and four were unchanged. This contrasted with the control group of eleven patients, where one patient deteriorated, one